

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The Final Office Action dated October 25, 2011 has been received and its contents carefully reviewed.

Claims 1, 4, and 5 are hereby amended. Claim 3 is canceled without prejudice or disclaimer. Claims 6, 7, 10, and 13 were canceled previously. No new matter has been added. Accordingly, claims 1-5, 8, 9, 11, and 12 are currently pending. Reexamination and reconsideration of the pending claims are respectfully requested.

The Office Action rejects claims 1, 2, 4, 5, and 8 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,811,806 to Droski (*Droski*) in view of U.S. Patent Application Publication No. 2003/0027505 to Withers et al. (*Withers*). The Office Action rejects claim 3 under 35 U.S.C. §103(a) as being unpatentable over *Droski* in view of *Withers*, and further in view of JP 2001-038254 to Aoyama et al. (*Aoyama*). Claim 1 is amended to incorporate the elements of claim 3, and claim 3 is canceled. Applicants will address the two rejection together.

To *establish prima facie* obviousness of a claimed invention, all the elements of the claim must be taught or suggested by the prior art. The combined teaching of *Droski*, *Withers*, and *Aoyama* fails to teach or suggest all the elements of claims 1, 2, 4, 5, and 8, and thus cannot render these claims obvious.

Amended claim 1 recites, “the catalyst solution preheating device comprises a cathode catalyst solution preheater preheating the cathode catalyst solution and an anode catalyst solution preheater preheating the anode catalyst solution.” *Droski* and *Withers*, either singly or in combination, fail to teach at least the above-recited element of claim 1. In fact, the Office Action admits that the combined teaching of *Droski* and *Withers* “does not explicitly teach that each nozzle of the apparatus is connected to an associated batch tank and **heater**.” *Office Action*, page 6, emphasis added.

Aoyama does not cure the deficiency of *Droski* and *Withers* with respect to claim 1. The Office cites *Aoyama* for disclosing that “each nozzle (Figs. 1-2 Ref. 25, Human Translation:

Abstract) of a spray apparatus may be connected to its very own **solution storage tank** (Figs. 1-2 Ref. 12, HT: Abstract).” *Office Action*, page 6. Whether or not this is true, *Aoyama* still fails to teach or suggest the above-recited element of claim 1, because the solution storage tank does not include **a heating element** and does not correspond to “a cathode catalyst solution preheater” or “an anode catalyst solution preheater.”

Accordingly, claim 1 is allowable over the combined teaching of *Droski* and *Withers*. Claims 2, 4, 5, and 8 variously depend from claim 1, and are also allowable for at least the same reasons as claim 1. Applicants therefore respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 1, 2, 4, 5, and 8.

The Office Action rejects claims 9, 11, and 12 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2005/0163920 to *Yan* et al. (*Yan*) in view of U.S. Patent No. 3,391,986 to *Goode* et al. (*Goode*). Applicants respectfully traverse the rejection.

Claim 9 recites, “**preheating** a cathode catalyst solution; **preheating** an anode catalyst solution; **preheating** a carrying gas; spraying the **preheated cathode catalyst solution** ... spraying the **preheated anode catalyst solution**.” The specification of the present application further explains that “[s]ince the cathode catalyst solution, the anode catalyst solution, and the carrying gas are supplied to the spray nozzles after having been respectively preheated, and the preheated solution is then sprayed, a catalyst layer can be more **uniformly** formed and a swelling phenomenon in the electrolyte membrane can be minimized.” Substitute Specification, page 11, lines 7-12, emphasis added.

Yan fails to teach or suggest at least these elements of claim 9. In fact, the Office Action admits that *Yan* does not disclose heating or preheating the catalyst ink solution and the carrier gas. *Office Action*, page 7.

Goode does not cure the deficiency of *Yan* with respect to claim 9. *Goode* is also silent with respect to the above-recited elements of claim 9. Specifically, *Goode* discloses that “the temperature of the catalyst system, as introduced into each nozzle, is in the range of about

minus 20 to about 120 degree C. (preferably about 0 to about 30 degree C.).” *Goode*, column 1, lines 64-67. *Goode* does not disclose that the catalyst system is heated.

More importantly, even if one tries to argue that *Goode* inherently teaches heating a catalyst system, one of ordinary skill in art still would not have been motivated to combine the teaching of *Yan* and *Goode*. That is because *Goode* is directed to a completely different process from that of claim 9, and any heating taking place in *Goode* is for a completely different purpose. In claim 1, preheating is performed to uniformly coat a catalyst layer on both sides of an electrolyte membrane. Any heating taking place in *Goode* is not for that purpose of uniformly coating a catalyst layer on both side of an electrolyte membrane. Therefore, one of ordinary skill in the art would not have been motivated to combine the teaching of *Goode* and *Yan*.

Accordingly, claim 9 is allowable over the combined teaching of *Yan* and *Goode*. Claims 11 and 12 depend from claim 9, and are also allowable for at least the same reasons as claim 9. Applicants therefore respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 9, 11, and 12.

The application is in condition for allowance and early, favorable action is respectfully solicited. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

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Respectfully submitted,

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